

1.4

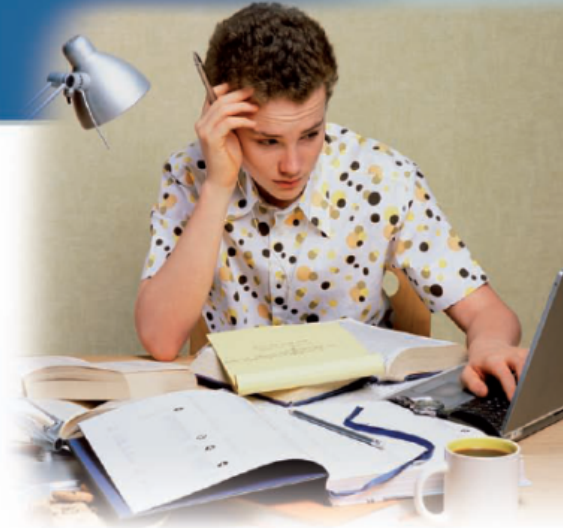
Surface Areas of Other Composite Objects

FOCUS

- Determine the surface areas of composite objects made from right prisms and right cylinders.



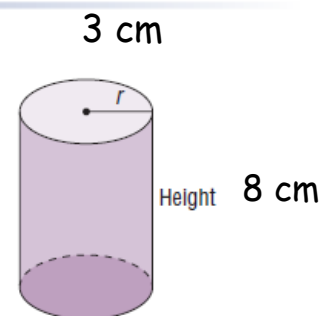
A student designed this stand for a table lamp. How could the student determine the surface area of this stand? What would he need to know?



Nov 24-1:34 PM

Connect

A cylinder has 2 congruent bases and a curved surface.



Area of a Circle

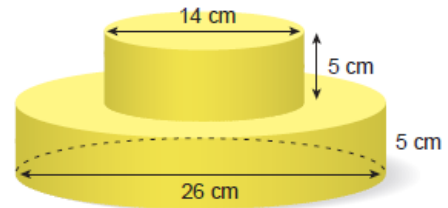
Area of Curved Surface

Total Surface Area =

Nov 25-12:37 PM

Example 2**Determining the Surface Area of a Composite Object Made from Two Cylinders**

Two round cakes have diameters of 14 cm and 26 cm and are 5 cm tall. They are arranged as shown. The cakes are covered in frosting. What is the area of frosting?

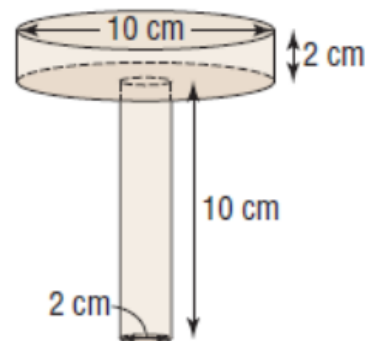
**SOLUTION:**

Total surface area = small cake + Large Cake - overlap

Nov 24-2:41 PM

YOU TRY!

Calculate the total surface area of the two cylinders.

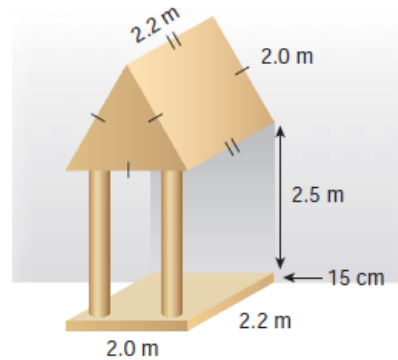
**SOLUTION:**

Nov 24-2:41 PM

Example 3**Using the Pythagorean Theorem in Surface Area Calculations**

The roof, columns, and base of this porch are to be painted.
The radius of each column is 20 cm.
What is the area to be painted, to the nearest square meter?

SOLUTION:



Nov 24-2:41 PM

REVIEW OF FORMULAS

Surface Area of a Composite Object

This is the sum of the surface areas of the objects that make up the composite object, minus the overlap.

The objects that make up the composite object can be:

- ▶ A right rectangular prism with

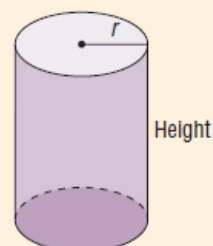
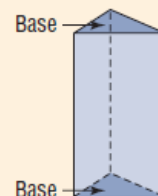
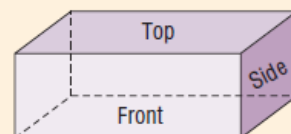
$$\text{Surface area} = 2 \times \text{area of top face} + 2 \times \text{area of front face} + 2 \times \text{area of side face}$$

- ▶ A right triangular prism with

$$\text{Surface area} = 2 \times \text{area of base} + \text{areas of 3 rectangular faces}$$

- ▶ A right cylinder, radius r , with

$$\begin{aligned} \text{Surface area} &= 2 \times \text{area of one circular base} \\ &\quad + \text{circumference of base} \times \text{height of cylinder} \\ &= 2\pi r^2 + 2\pi r \times \text{height} \end{aligned}$$



Nov 25-2:45 PM

Practice

Page 40 # 3ab

Page 41 # 4, 5a, 6, 9

Page 42 # 11